information recognition ~~system in which the~~ at reduced computing cost ~~can be reduced~~.

In the Claims:

1. (Currently Amended) A system for recognizing motion information of an object based on the images of said object, comprising:

an imager for taking time-series images of ~~an moving~~ rotating movement of the object;

image capture means for capturing said time-series images of said object to generate image vectors representing rotating movement of said object;

a primary component analyzer for obtaining, through principal component analysis, a plurality of eigenvectors of the image vectors of a sample object which are generated by said image capture means;

a storage for storing said plurality of eigenvectors;

inner product means for performing inner product operations between the image vectors of ~~a recognized object~~ an object being recognized which are generated by said image capture means and said plurality of eigenvectors stored in said storage means; and

calculation means for obtaining the motion information including angular speed and rotation direction of said ~~recognized~~ object being recognized based on the result of said inner product operations.

2. (Currently Amended) The rotating movement ~~motion information~~ recognition system as claimed in claim 1, wherein said image vectors of said sample object and said image vectors of said ~~recognized~~ object being recognized are generated from at least two images which are successive in terms of time.

3. (Currently Amended) The rotating movement ~~motion information~~ recognition system as claimed in claim 1, further comprising selection means for selecting the largest eigenvalue for a first eigenvector and the second largest eigenvalue for a second eigenvector.

4. (Currently Amended) The rotating movement ~~motion information~~ recognition system as claimed in claim 3, wherein said calculation means, based on ~~the~~ phase of ~~the~~ a result $g_1(t)$ of the inner product operations between said image vectors of said ~~recognized~~ object being recognized and said first eigenvector, and ~~the~~ phase of ~~the~~ a result $g_2(t)$ of the inner product operations between said image vectors of said ~~recognized~~ object being recognized and said second eigenvector, obtains an angular speed of said ~~recognized~~ object being recognized according to the following equation (a) when said $g_1(t)$ is delayed in phase relative to said $g_2(t)$:

(a) $\omega = \frac{d}{dt} g_1(t)/g_2(t)$;

and obtains an angular speed of said ~~recognized~~ object being recognized according to the following equation (b) when said $g_1(t)$ is advanced in phase relative to said $g_2(t)$:

(b) $\omega = \frac{d}{dt} g_2(t)/g_1(t)$.

5. (Currently Amended) A computer program ~~executable on a computer~~ stored on a computer readable medium for recognizing ~~the motion information~~ rotating movement of an object based on the images of said object, being configured to:

take time-series images of ~~an moving~~ rotating movement of said object;

generate learned image vectors representing rotating movement of said object from said time-series images of said object;

obtain, through principal component analysis, a plurality of eigenvectors of the learned image vectors;

store said plurality of eigenvectors;

perform inner product operations between the image vectors of a recognized object and said plurality of eigenvectors stored in said storage means; and

obtain the motion information including angular speed and rotation direction of said ~~recognized~~ object being recognized based on the result of said inner product operations.

6. (Currently Amended) The computer program stored on a computer readable medium as claimed in claim ~~1~~ 5, being further configured to generate said image vectors of said sample object and said image vectors of said ~~recognized~~ object being recognized from at least two images which are successive in terms of time.

7. (Currently Amended) The computer program stored on a computer readable medium as claimed in claim ~~1~~ 5, being further configured to select the largest eigenvalue for a first eigenvector and the second largest eigenvalue for a second eigenvector.

8. (Currently Amended) The computer program stored on a computer readable medium as claimed in claim ~~3~~ 7, being further configured to, based on ~~the~~ phase of ~~the~~ a result of the inner product operations between said image vectors of said ~~recognized~~ object being recognized and said first eigenvector and the result of

the inner product operations between said image vectors of said ~~recognized~~ object being recognized and said second eigenvector;

obtain an angular speed of said ~~recognized~~ object being recognized according to the following equation (a) when said result for the first eigenvector is delayed in phase relatively to the result for the second eigenvector:

(a) $\omega = \frac{d}{dt} g_1(t)/g_2(t)$; and

obtain an angular speed of said ~~recognized~~ object being recognized according to the following equation (b) when said result for the first eigenvector is advanced in phase relatively to the result for the second eigenvector:

(b) $\omega = \frac{d}{dt} g_2(t)/g_1(t)$.

9. (Currently Amended) A method for recognizing the motion information of an object based on the images of said object, comprising:

taking time-series images of an moving object;

generating learned image vectors representing rotating movement of said object from said time-series images of said object;

obtaining, through principal component analysis, a plurality of eigenvectors of the learned image vectors;

storing said plurality of eigenvectors;

performing inner product operations between the image vectors of ~~a recognized~~ said object being recognized and said plurality of eigenvectors stored in said storage means; and

obtaining the motion information including angular speed and rotation direction of said ~~recognized~~ object being recognized based on the result of said inner product operations.

10. (Currently Amended) The method as claimed in claim ~~1~~ 9, further comprising generating said image vectors of said sample object and said image vectors of said ~~recognized~~ object being recognized from at least two images which are successive in terms of time.

11. (Currently Amended) The method as claimed in claim ~~1~~ 9, further comprising selecting the largest eigenvalue for a first eigenvector and the second largest eigenvalue for a second eigenvector.

12. (Currently Amended) The ~~program~~ method as claimed in claim ~~3~~ 11, further comprising, based on ~~the~~ phase of ~~the~~ a result of the inner product operations between said image vectors of said ~~recognized~~ object being recognized and said first eigenvector and the result of the inner product operations between

said image vectors of said ~~recognized~~ object being recognized and said second eigenvector;

obtaining an angular speed of said ~~recognized~~ object being recognized according to the following equation (a) when said result for the first eigenvector is delayed in phase relatively to the result for the second eigenvector:

(a) $\omega = \frac{d}{dt} g_1(t)/g_2(t)$; and

obtaining an angular speed of said ~~recognized~~ object being recognized according to the following equation (b) when said result for the first eigenvector is advanced in phase relatively to the result for the second eigenvector:

(b) $\omega = \frac{d}{dt} g_2(t)/g_1(t)$.